DUF_6 Depleted Uranium Hexafluoride Conversion Project	**DUF_6-UDS-PLN-111** **REVISION 0** **NOVEMBER 2007**

Conduct of Operations (CONOPS) Mentoring Strategy for the Portsmouth and Paducah DUF_6 Conversion Facilities

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DISCLAIMER

Depleted Uranium Hexafluoride Conversion Project

Conduct of Operations (CONOPS) Mentoring Strategy for the Portsmouth and Paducah DUF$_6$ Conversion Facilities

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Date: 14 Nov 07

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DUF_6 CONVERSION PROJECT

Revision Summary

TITLE:	DOCUMENT NO:	REV:
Conduct of Operations (CONOPS) Mentoring Strategy for the Portsmouth and Paducah DUF_6 Conversion Facilities	**DUF_6-UDS-PLN-111**	**0**

REVISION DESCRIPTION

THIS IS A NEWLY CREATED DOCUMENT, NOT A REVISION.

DOCUMENT CONTENTS

ACRONYMS

AHA- Activity Hazard Analysis

ALARA- As Low As Reasonably Achievable

CONOPS-Conduct of Operations

CORR-Corporate Operational Readiness Review

DSA-Documented Safety Analysis

DUF6- Depleted Uranium Hexafluoride

DOE- Department of Energy

DOE ORR- Department of Energy Operational Readiness Review

ES&H-Environmental Safety and Health

FCR- Field change requests

HMI- human-machine interface

I&C-Instrumentation and Control

JCO-Justification for Continued Operations

LCO- Limiting Condition of Operation

LO/TO- Lockout/Tagout

MSA- Management Self-Assessment

MOP- Management Oversight Personnel

OJT- On-the-Job-Training

PBT- Performance Based Training

P&IDs- Piping and Instrumentation Diagrams

SSCs-Structures, Systems, and Components

SS SSCs- Safety Significant Structures, Systems and Components

SDD- System Design Description

SS-Safety Significant

USQD- Unreviewed Safety Question Determination

TSR- Technical Safety Requirements

1 Purpose

This document provides the strategy elements to be utilized at the Depleted Uranium Hexafluoride (DUF6) Uranium Disposition Services (UDS) Portsmouth and Paducah plants to provide a Conduct of Operations (CONOPS) Mentoring program and process for the UDS organizations of both sites. CONOPS is a process used to control nuclear operations activities in a safe and formal manner using disciplined, rigor-based concepts and processes.

2 Introduction

During the late 1980s, the domestic commercial nuclear power industry was struggling to overcome the negative stigma resulting from nuclear operational errors and safety breaches that resulted in the Three Mile Island and Chernobyl nuclear accidents. Over time, the commercial nuclear industry developed and implemented measures that formalized and added rigor to their operations processes. Behavioral skill training for operations rigor was conducted in the commercial nuclear industry throughout the late 1980s and early 1990s. Much of the nuclear operations rigor training was derived from the Department of Navy nuclear precepts and formality of operations philosophy. Implementation of these operations formalization measures was intended to produce a desired effect of reducing reportable event occurrences, operational errors and safety breaches. The formalization and rigor training was successful in creating the desired effect as the error and accident rates dropped dramatically. Accordingly, the nation's commercial nuclear facilities demonstrated improved plant availability statistics of greater than 90% through 2002. A commensurate reduction of operations costs also resulted from the formalization and rigor improvements. These event reduction results were manifest by improvements in human (operator) performance resulting directly from mentoring and coaching safe work habits through rigor and formality in the operations organizations.

In July of 1990, the Department of Energy (DOE) published its formality of operations requirements for Defense-related nuclear facilities in similar fashion as their sister Federal agency the Nuclear Regulatory Commission (NRC). DOE incorporated many of the NRC operations rigor and formalization concepts into DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities. The DOE 5480.19 document has undergone 2 revision Changes (1992, and 2001) and continues to provide fundamental requirements for implementing nuclear operations in a formal and disciplined manner. The Order directs the use of a Graded Approach to CONOPS requirements depending on the hazards present in the facility. The graded approach is intended to assure that the depth of detail required and the magnitude of resources expended for CONOPS principles in DOE nuclear facilities is commensurate with each facility's programmatic importance and potential environmental, safety, and/or health impacts.

A UDS CONOPS Program, including a CONOPS Manual, Matrix of Applicability, Document of Decisions and Mentor Strategy will be developed and implemented to enhance consistent rigor and formality at both sites. These documents will provide CONOPS Program definition, graded approach applicability, and grass-roots implementation processes to ensure programmatic compliance to the directives of DOE Order 5480.19.

This CONOPS Mentor Strategy document outlines and describes the process elements, execution, implementation, and rules of engagement expectations that will be utilized by the UDS CONOPS Mentors to achieve graded approach Conduct of Operations at UDS Portsmouth and Paducah DUF6 facilities. Mentor Performance Measures are also discussed. Since CONOPS formality and rigor is

essentially a new entity at both UDS sites, program implementation will be guided by the CONOPS Mentors during construction, initial testing, readiness preparations/assessment, startup, and initial operations at both sites.

3 CONOPS Mentor Selection and Mentoring Elements

Only professional individuals with vast experience in nuclear facility design, construction, testing, training, operations, and maintenance will be considered for selection by the UDS Project Operational Readiness Manager as CONOPS Mentors. This extensive experience requirement can be met by the individual's having worked in the commercial nuclear utility industry, Department of Energy nuclear weapons complex, or the Department of Defense military nuclear operations. CONOPS Mentor attributes must also include extensive oral and written communication skills, leadership/coaching abilities and team-building experience. Due to the nature of the duties and task assignments to be placed on the CONOPS Mentors at the Portsmouth and Paducah plant sites, knowledge of and past participation in DOE nuclear operational readiness review processes will be a fundamental Mentor selection criterion. CONOPS Mentor input, recommendations and participation will be sought after by UDS management at all levels owed to their breadth of experience, maturity of perspective and intensity of focus on operations rigor and formality.

The CONOPS Mentor coaching activity for operations and maintenance personnel will include all chapters of the UDS CONOPS Manual, as identified in the UDS CONOPS matrix. Coaching and mentoring activities will include procedure use, reader worker fundamentals adherence, control area duties and responsibilities, control of equipment, communications, LO/TO, print reading and verification of SSC configuration, independent verification, and all other elements of CONOPS listed in Appendix 1, CONOPS Mentor Coaching Elements. Coaching will continue until plant management has determined that operations and maintenance personnel (and support groups as necessary) have achieved a superior level of stand-alone CONOPS knowledge, rigor and formality in preparation for scheduled readiness reviews, management assessments, operational readiness reviews (ORRs) and safe, efficient operation of each plant.

3.1 CONOPS Manual, Strategy, Matrix, and Implementation documents

CONOPS Mentors will be instrumental in the conceptual development, review, approval, and periodic revision of UDS Conduct of Operations documents, embracing the concepts of graded approach and continuous improvement. The CONOPS Manual will be the program description document that defines how UDS complies with DOE Order 5489.19 requirements in both operations and maintenance activities. The CONOPS Matrix will satisfy the requirement of the DOE Order to assess, document and define DOE Order 5489.19 Chapter applicability. A sub-tiered implementation Document of Decisions will be developed by UDS as needed, to provide specific grass-roots level implementation guidelines, responsibilities and interface structure among the various UDS organizations.

3.2 UDS Construction and Initial Testing Support

During construction of the facilities at Portsmouth and Paducah, CONOPS Mentors will support UDS management through a variety of activities, including:

- Participation in Activity Hazard Analysis (AHA) and work control document development/discussion meetings. This is necessary since many of the site construction

contractors are not formally trained in CONOPS and Integrated Safety Management System (ISMS) practices and processes. The CONOPS Mentors will help promote structure and formality in defining the work scope of high-hazard construction activities so hazards analysis and controls are adequately incorporated.

● Participation in pre-job construction briefings to help promote constructive discussions on worker precautions and hazard avoidance measures (e.g., AHA, etc.) and work prerequisites.

● Mentoring and coaching of construction workers and their supervision on the acceptable implementation of work control procedure redline changes, procedure suspension (as required), work authorization, postings, LO/TO observance, communications, and other CONOPS processes, as needed.

● Participation in post-job construction briefings to ensure feedback is provided on both positive and negative (issues and problems) work completion activities. The CONOPS Mentors will facilitate construction Lessons Learned meetings as required and initiate documentation through the UDS Corporate Compliance Officer to ensure the lessons are communicated across both UDS sites as required.

● Observation of system evolution verifications and tests, including initial checks, leak tests, electrical equipment energizations, and other high-hazard tasks.

● Performance of P&ID and one-line drawing system configuration verifications in the field.

For purposes of efficiency and learning curve effectiveness, the CONOPS Mentors at the one UDS plant site (Portsmouth /Paducah) will share pertinent construction issues, discovery issues, lessons learned, system procurement and receipt inspection problems and other issues with their corollary CONOPS Mentors and the Plant Manager at the other UDS site. By maximizing this CONOPS Mentor plant site interface strategy, issue resolution and problem corrective actions deemed necessary at one plant site may prevent or significantly minimize costly impacts of the identical issues or problems at the other site. Once the full complement of CONOPS Mentors are in place at both plant sites, inter-site communications between the two plant locations will streamline the discovery and identification of issues during construction completion and testing at both sites. Implementation of this CONOPS Mentor strategy will reduce pre-operational costs, decrease baseline extension requirements on the critical path schedule, and contribute to a more effective utilization of construction resources.

3.3 Issues Management

As structures, systems and component (SSC) issues and problems are discovered in UDS facilities, whether by the CONOPS Mentors or when brought to their attention by UDS staff, they will be reviewed and investigated by the CONOPS Mentors to ensure the full extent of the issue or problem has been realized and documented. The extent of condition of the issue will also be addressed. Peripheral impacts on interfacing or support systems will also be assessed and documented as needed. As directed by the Plant Manager, the CONOPS Mentors will facilitate an evaluation of the event, ensuring that the forum is used to focus on fact-finding, chronology of events (timeline), adequacy of immediate actions taken, and subsequent corrective action assignments and scheduling. The CONOPS Mentors will provide written documentation to the issues management designee on issues and/or problems they discover in the plant to ensure they are tracked to corrective action completion and closure. The UDS Compliance Officer will

be copied on issue awareness documentation to provide early notification of potential Condition Reporting, nonconformance report (NCR) generation or Occurrence Reporting, as necessary.

3.4 On-shift Training, Continuing Training, and Retraining

Conduct of Operations will be the core culture of UDS formality and discipline wherein operations personnel will seek and accept ownership of assigned facility systems and equipment at both Portsmouth and Paducah plant sites. The CONOPS Mentors will focus on the operator/maintenance work activity elements listed in Appendix 1. Knowledge of the facility requirements, operations formality and discipline will be acquired by the operations personnel during their training regimen that stresses the safety culture. Formal training, crew briefings, and team learning sessions will be conducted by the Mentors on the application of each of the chapters of DUF_6-UDS-XXXX, *Conduct of Operations Manual*. CONOPS rigor and formality is founded in a comprehensive training program, in qualification of the employees, and in the disciplined use of procedures for conducting work activities in a structured and rigorous manner.

CONOPS Mentors will also facilitate regularly scheduled crew briefing sessions for the operators and maintenance personnel. These scheduled sessions and briefings will be conducted with the Operations Manager, Superintendents and Supervisors in attendance, and will be interlaced with UDS systems fundamentals, plant layout discussions and operational features presentations. CONOPS Mentors will ensure the crew briefings are structured and focused around the exercise guidelines provided in Appendix 2, *Crew Briefing Exercise Guidelines.* The classroom sessions and crew briefings will involve 2-3 hours in a classroom setting, followed by 1-3 hours of field walkdown sessions later in the day or week. The crew briefings will be conducted on a scheduled weekly basis with pre-designated systems to be covered. Appendix 3, *Crew Briefing Rules of Engagement*, provides formality of conduct of the Mentor-facilitated crew briefings to maximize the learning opportunity. Attendance rosters will be provided and retained as a formal record to document the weekly activities. The crew briefing sessions will be structured to supplement and complement formal systems training to be provided by the UDS Training Organization.

Since several types of drills will be conducted during the plant readiness assessments and ORRs, the formality and rigor of the conduct of drills will be addressed in the crew briefing sessions with operations and maintenance personnel. Drill scenario implementation, monitoring, communications, grading, and documentation will be covered as one of the topics in the Mentored crew briefings.

CONOPS Mentors will also ensure the crew briefing sessions provide focus on the formal, disciplined and effective control of work activities, safety culture, positive work ethic, having a questioning attitude, the practice of self-checking using the STAR concept (Stop, Think, Act, and Review), command and control philosophy, barrier removal techniques, peer checking, and the development of a teamwork approach to issue resolution. When the CONOPS Mentors have completed the coaching of operations and maintenance personnel on these topics, work activity expectations will be more clearly understood and work can be accomplished in a safe and disciplined manner using the CONOPS concepts.

At the completion of their training and qualification program, operations and maintenance personnel will be required to complete a comprehensive examination, including practical factors and plant walkdowns as directed by the UDS Training Department. These performance measurements are intended to evaluate their knowledge base against the qualification standards for the position. By participating in the Mentor coaching sessions and dedicated crew briefings, completion of the final examination elements will present an opportunity for the operator and maintenance personnel to demonstrate an in-depth knowledge of UDS plant systems, operations/maintenance requirements, the safety culture, and formality of operations

concepts. CONOPS Mentors will provide feedback to the UDS Plant Manager, Operations Manager, and Maintenance Manager on the proficiency of their personnel to stand shift.

Achieving and maintaining an adequate operator CONOPS presence in the UDS Portsmouth and Paducah plant facilities is not a static achievement. Continuing training and retraining of personnel in CONOPS philosophy and concepts will be required periodically for operations and maintenance personnel. The periodicity and/or frequency of continuing training and retraining sessions will be determined by the UDS Operations Manager, Maintenance Manager, and Plant Manager. CONOPS retraining periodicity may also be altered by safety statistics compiled by the site Environmental Health and Safety (ES&H) organization.

CONOPS Mentors with past experience as qualified nuclear instructors in the commercial nuclear industry, Department of Defense nuclear weapons complex or Defense military nuclear operations will be qualified as Training Instructors by the UDS Training organization. By serving as qualified instructors, CONOPS Mentors can utilize their expertise and knowledge in the classroom for the maintenance/operator crew briefing exercises, performance based training (PBT) and OJT walkdown activities and the activities can be documented in the UDS training records database.

3.5 Plant Walkdowns

A fundamental element of the CONOPS Mentor program involves Mentor observation and coaching of operations and maintenance personnel during plant walkdowns. Walkdowns will be conducted regularly during the initial operator training period as an effort to ensure the operations personnel are sufficiently knowledgeable of UDS plant SSC operating parameters and acceptance criteria during normal, upset and emergency conditions. Maintenance/operations personnel will need a working knowledge of plant systems to the component level, knowledge of the system boundaries, and a working cognizance of the system interface with attendant support systems. CONOPS Mentor walkdowns will be conducted with the operators during construction, start-up testing, and at first use. Plant walkdowns will include discussions of the plant systems, including, as a minimum, the topical examples presented in Appendix 4, *Plant Walkdown Topic Examples.* Walkdowns will encompass some of the practical factors developed by the Training organization for system "signoffs" on the operator qualification card. Piping and instrumentation diagrams (P&IDs) and one-line drawings [mechanical, instrumentation and controls (I&C), electrical, etc.] of facility systems will be used to verify SSC configuration and labeling during walkdowns, before start-up testing and turnover, and during first use activities as directed by DUF_6-UDS-PLN-088, *Startup Plan for the Startup of Depleted Uranium Hexafluoride Conversion at the Portsmouth and Paducah Sites*. Deficiencies, nonconformances and problems discovered during the walkdowns will be documented in accordance with UDS-U-DI-001, *Desk Instruction for Operational Readiness Tracking List for the Portsmouth and Paducah DUF_6 Conversion Facilities*. Use of the tracking list by the walkdown participants will provide early identification and resolution of potential issues that could adversely impact system turnover and/or readiness activities.

At completion of their training program, final facility system practical factor walkdowns will be performed by operations and maintenance personnel while accompanied by Operations and/or Maintenance Managers, Shift Superintendents, and Shift Supervisors. These practical factor walkdowns will be conducted to ensure the operators comprehend the operational details and interface of system equipment, instrumentation used to verify operability of those systems, and maintenance requirements of the system equipment. These operator and maintenance evaluation walkdowns will also be logged in the practical factors segment of the operations Qualification Card, and will be verified (once successfully

performed) with a signature and date of acceptable performance by the Operations Manager, Maintenance Manager or their designee.

Operations personnel are also responsible for conducting rounds and surveillances of facility equipment as part of their daily work activities. Safety Significant and Defense in-Depth system components will be identified during CONOPS Mentor-coached operator walkdowns once they have been identified by engineering on the facility Master Equipment List (MEL).

3.6 Authorization Basis Implementation

The UDS facility Authorization Basis (AB) is that set of facility design bases and operational requirements relied upon by the DOE to authorize operation of the Portsmouth and Paducah plants. Compliance with the AB requires continuous adherence to the provisions of each plant site Documented Safety Analysis (DSA) and Technical Safety Requirements (TSR) plus other requirements-based documents that will comprise the Safety Basis List:

1. DUF_6-X-G-DSA-001, *Portsmouth DUF_6 Conversion Facility Documented Safety Analysis*
2. DUF_6-C-G-DSA-001, *Paducah DUF_6 Conversion Facility Documented Safety Analysis*
3. DSA for DUF_6-X-G-DSA-002, *Documented Safety Analysis for the Department of Energy X-745C, X-745E and X-745G-1 UF_6 Cylinder Storage Yards*
4. UDS-X-TSR-002, *Technical Safety Requirements for the DUF6 Conversion Facility, Piketon, Ohio*
5. UDS-C-TSR-002, *Technical Safety Requirements for the DUF6 Conversion Facility, Paducah, Kentucky*

During the structured crew briefing sessions, CONOPS Mentors will coach operations and maintenance personnel in needed formalization and rigor of compliance to the AB requirements during equipment operation, maintenance, surveillances, and other operational activities while the plant is under normal, abnormal and emergency plant conditions.

3.7 CONOPS Mentor Coaching of Operator Work Activities and Interface

CONOPS Mentors will be actively involved in coaching and mentoring operations personnel in their newly-assigned facility interface duties and responsibilities. Although many of the operations and maintenance personnel are not new to facility operations and maintenance activities, they will need to acquire a formal understanding of UDS expectations for conducting those activities in a formal and rigor framework using ISMS precepts for guidance. Mentor coaching of UDS operations and maintenance personnel will include the CONOPS elements identified in Appendix 1, and will also include operator work activities and processes encountered on a daily basis within the plant, including:

- acquiring a fundamental knowledge of UDS systems and equipment

- implementing the process of gathering and communicating daily plant status updates. This includes crew briefings, plan-of-the-day (POD) and/or plan-of-the-week (POW) meetings, by reviewing round sheets, human-machine interface (HMI) screens and system status boards, as applicable

● observing operations activities and conditions in the work area and reporting problems, upsets, anomalies, and noncompliances to the Shift Superintendent and Operations Manager

● maintaining system status boards or system control screens in HMI equipment

● taking immediate actions correctly in an emergency in order to ensure personnel, facility, and environmental safety without prior approval, as required

● ensuring that shift relief and turnover, where required, is thorough, complete and documented

● ensuring that operations communications are clear, concise and accurate

● implementing the believe-your-gages concept for normal operations and system upsets

● ensuring that round sheets and logs are complete and accurately reflect the conditions observed and operator actions taken, if needed

● red-circling any unacceptable round sheet instrument readings with appropriate comments and follow-up actions

● ensuring that deficiencies noted when conducting TSR surveillances and operations are promptly reported to the Operations Manager

● planning, scheduling and execution of work control

● ensuring that responses to alarms and anomalies are accomplished as required by procedures and are appropriately documented

● routinely reviewing and ensuring that housekeeping in the UDS plants is observed, that combustible loading requirements are not exceeded, that hazardous materials are not introduced into unauthorized areas, that As Low As Reasonably Achievable (ALARA) principles are observed, and that all postings are authorized and observed

● ensuring that all applicable operations and maintenance work activities have been included on the POD and/or POW, and that work start authority has been provided

● participating in Emergency Management drills and plant exercises

● other focus activities as directed by the Operations Manager

4 CONOPS Mentor Staffing

The mentoring and coaching effort will entail CONOPS Mentors working with all four shifts of operations and maintenance personnel at both UDS plant sites. It is envisioned that there will be a CONOPS Mentor for each shift at each plant. This brings the total CONOPS Mentor workforce to 4 at each site plus one Lead CONOPS Mentor whose time will be divided between both plant sites. Coaching and mentoring will continue throughout the construction phase, the start-up testing phase and into the operational phase. Once the Portsmouth and Paducah plants are fully operational, the CONOPS Mentors will continue their coaching activities with plant personnel on a 24 hour per day, 7 days per week

coverage basis through initial plant operation evolutions. Coaching will continue until each site Plant Manager and the Maintenance and Operations Managers have determined that operations and maintenance personnel (and support groups as necessary) have achieved a superior level of stand-alone CONOPS knowledge, rigor and formality and can operate and maintain the plants without additional Mentor support. CONOPS Mentors will be scheduled to return to the plant sites periodically (once or twice per year), as necessity requires, to provide short sessions of intense CONOPS fundamentals team learning, crew briefings and/or retraining for new or existing plant personnel.

5 CONOPS Mentor Rules of Engagement Expectations

5.1 During Construction Evolutions

During attendance and observation of construction evolutions, CONOPS Mentors will observe the evolution, providing only constructive recommendations to the construction supervisor or as requested by the supervisor. CONOPS Mentors will not engage craft personnel directly during the conduct of their work activity by asking questions or by providing work direction. Suggestions for safety improvement or hazard avoidance will only be provided to craft foremen or supervisors for their dissemination to the craftsmen unless the CONOPS Mentors are requested by those supervisors and foremen to provide the discussions directly to the craftsmen. CONOPS Mentors have Work Stop authority, as does all UDS workers. If dangerous conditions are encountered that are outside the AHA controls base, adversely affect construction worker health and safety, or may cause unacceptable environmental impacts, the work activity must be stopped.

5.2 Testing Turnover

During attendance, observation and participation in testing and turnover activities, CONOPS Mentors will participate actively in planning and scoping discussion meetings to coach participants in CONOPS practices. CONOPS Mentors will observe testing and turnover evolutions, and provide recommendations and comments to the Lead Test Engineer for feedback. CONOPS Mentors may also serve as Management Oversight Personnel (MOP), as requested by plant management, during hot functional startup testing evolutions to ensure testing rigor is maintained, test acceptance criteria are met, and test results are accurately documented. When serving in this capacity, CONOPS Mentors will be recognized as a member of the test team and participate accordingly, in an oversight capacity.

5.3 First Use/Normal Operations

CONOPS Mentors will continue to provide mentoring and coaching of operations personnel after testing and turnover and into first use of plant systems and equipment. CONOPS Mentors will accompany operations personnel on initial evolution equipment checks, rounds, surveillances, and other activities, as requested by the Operations Manager. Issues and problems discovered by operations personnel and CONOPS Mentors on these initial evolutions and first use activities will be addressed in crew briefings and staff meetings to ensure a consistent level of cognizance across the entire operations staff.

5.4 Notifications and Communications

Notifications and communications related to construction, testing and operations activities should be provided up through the chain of command with protocol and one-step-up chain of command as applicable. CONOPS Mentors should not be involved in the notifications protocol unless requested to do

so by operations supervisors or management, during upset or duress conditions, or in emergency conditions. CONOPS Mentors will have open lines of communications with the Plant Manager and their direct reports for discourse on programmatic involvement and recommendations, evolution issues, lessons learned, and feedback. As a matter of policy, CONOPS Mentors are not responsible for official notifications to the Department of Energy of abnormal plant conditions or safety issues.

6 CONOPS Mentor Performance Measurement

UDS operator performance will be evaluated against the list of activities provided in Appendix 1, and the manner in which operations and maintenance personnel exhibit CONOPS rigor and formality as charted in DOE Order 5480.19. Readiness preparedness metrics will be the final factor in determining when the UDS operators are prepared to assume their duties. One indicator of maintenance and operator personnel readiness and preparedness will be when they have achieved the level of cognizance, formality and rigor that they need no additional coaching from the CONOPS Mentors. Successful completion of the UDS Portsmouth Management Self Assessment (MSA), Corporate Operational Readiness Review (CORR), and the DOE Operational Readiness Review (DOE ORR) will also provide an indicator of CONOPS Mentor performance.

7 Schedule

Several CONOPS Mentors are currently in place at the plant sites and additional Mentors will be brought on board. CONOPS Mentor coaching and mentoring of operations personnel will continue at both UDS sites throughout construction, startup testing, and integrated testing operations. This duration is expected to be 12 to 18 months for construction and readiness preparation and 6 months for first-use activities. As operations personnel are hired, brought on board and trained, the CONOPS Mentors will initiate coaching and mentoring activities. After successful completion of UDS operational readiness reviews, including the DOE ORR, the CONOPS Mentors will assist in providing oversight of first-use operational activities, and subsequent full-scale operation of both plants. Their schedule of Mentoring activities will essentially track with the UDS Readiness schedule.

8 APPENDIX 1 CONOPS Mentor Coaching Elements

CONOPS Mentors will provide review, evaluation and mentor/coaching of operations and maintenance personnel on UDS operations and maintenance work elements, work control practices, and safety basis implementation processes at the Portsmouth and Paducah UDS DUF6 sites. Mentor coaching will focus on the operations and maintenance interface, involvement, and implementation of their daily regimen of plant activities as they relate to a lengthy list of CONOPS elements. Those elements include, but are not limited to the following:

1. Conduct of POD, POW meetings and crew briefings
2. Limiting Condition of Operation (LCO) surveillance implementation
3. Work evolution and work packages
4. AHA and work control Traveler review meetings
5. Pre-Job Briefings and Post-Job Briefings
6. Temporary Modification documentation (index and logbook) and process reviews
7. Postings reviews and applicability assessments
8. Procedures reviews for scope and content accuracy and procedure use
9. Conduct of Shift Relief and Turnover processes and documentation reviews.
10. Development and use of Standing Orders, Shift Orders, Operations Orders.
11. Development, control and use of Operator Aids and other postings.
12. CONOPS Communications (formal, verbal) between operations personnel.
13. Development and use of Shift Logs
14. Review of Operations Assessments and Lessons Learned processes.
15. Return-to-Service Checklist documentation (development and Implementation)
16. Independent Verification activities
17. System Alignments (partials), and System Alignment Checklist processes
18. System tagging (Caution Tags, Information Tags, Tag-out Tags, Administrative Control Tags, Out-of-Service Tags, Do Not Operate Tags, etc., as applicable)
19. System and component labeling
20. Control area activities
21. Surveillance implementation
22. Controlled deactivation of alarms
23. Configuration change control processes
24. Development and use of round sheets for system operation review
25. Development and use of shift orders and standing orders
26. Performance of compensatory measure actions
27. Justification for Continued Operation (JCO) documents
28. Unreviewed Safety Question Determinations (USQDs)
29. Other CONOPS-related elements

9 APPENDIX 2 Crew Briefing Exercise Guidelines

Crew briefing exercises for operations and maintenance personnel will be conducted weekly with operations and maintenance management in attendance. The exercises will be interlaced with CONOPS fundamentals, plant system/operations fundamentals, maintenance, plant configuration discussions, AB requirements, plant walkdowns, and other elements. Crew briefing exercise guidelines include:

- Crew briefing exercises
  - Scheduled weekly
  - CONOPS Mentor Facilitated
  - 3-4 hours of classroom crew briefings and presentations each week
  - 2-3 plant system topics each session
  - CONOPS topic(s) formally presented each week
  - System study/crew briefing sequence uses the approved Testing Flow Chart Chronology
  - Crew briefing leaders will be delegated in advance by the Operations Superintendent
  - System Test Engineers will attend/participate if possible
  - Attendance rosters and study materials used will be retained
  - Teambuilding and Team-Learning environment
  - Training personnel will be invited to participate
  - Minimize formal presentation graphics development
  - Listen, learn, and participate
  - Crew briefing session leader will provide a copy of study materials, notes, hand drawings, P&IDs, one-line diagrams, etc., for use by session attendees.
  - UDS Crew Briefing Forms, attendance rosters and briefing materials will be preserved as a records package in accordance with the records retention roster.

- Plant system operations and maintenance information
  - Large scale P&IDs or one-line diagrams (controlled copy)
  - General system design description
  - System specifications, set points, operating parameters
  - System operation characteristics
  - System interfaces
  - Support systems (electrical, instrument air, steam, etc.)
  - System boundaries
  - Major Instrumentation
  - System maintenance requirements, maintenance periodicity, calibrations
  - LCO details as applicable
  - Surveillances, etc
  - Safety significant structures, systems and components (SS SSCs)
  - Defense in depth structures, systems and components
  - Rounds and round-sheet use
  - Field change requests (FCRs), design changes
  - Construction % complete
  - Testing completion status
  - Operations procedures (if available)

- System(s) walkdowns will be conducted following the crew briefing sessions

10 APPENDIX 3 Crew Briefing Rules of Engagement

- CONOPS Mentors will facilitate the weekly crew briefing exercises
- Crew briefing leaders will be designated at least a week in advance
- Plant system briefing discussions are 45 minutes (optimum)
- Use only controlled copies of drawings and latest version of reference documents
- Crew briefings require full attention by all participants
- No interruptions during the crew briefing sessions
- Pagers and cell phone must be off or on vibrate mode during briefing sessions
- Roundtable questions will be conducted at the end of the briefing
- One conversation at a time, i.e., no cross-talk
- Team-building courtesy between the presenter and attendees
- Peer critique process will be used (general content, scope, depth of detail, etc.)
- Lookups will be documented by the facilitator
- Lookups will be first on the agenda the following week

11 APPENDIX 4 Plant Walkdown Topic Examples

Note: This list is not considered to be all inclusive. The following examples are items that need to be checked during walkdowns.

Hand-over-hand system and piping verification
P&ID/One-line drawing (controlled current revision) validation/verification
Mechanical (plant / drawing / SDD agreement)
- Component location
- Component verification
- System Identifier
- Pump flow direction
- Valve type, position verification and energy source
- Pump type, energy source and isolation points
- Labeling
- Instrument calibration
- Gauge ranges (Min/Max per specs)
- Piping material type (SS, Galvanized or black iron)
- Pipe diameters
- Piping diameter step-up or step-down locations
- Boundary of systems (plant / drawing agreement)
- Boundary of systems (labeling)
- Backflow preventer configuration
- Low-point drains
- Hanger and strut integrity and configuration
- Fastener integrity and configuration
- Seismic anchors and hangers
- Leaks, drips, residue or materials accumulation

Electrical (plant / drawing agreement)
- Wire size per electrical specs (notes)
- Cut or frayed wiring or cords
- Breaker Panel kick plates installed, no open receptacle holes
- Wire terminations (i.e., loose wires, taped or wire nuts, etc.)
- Grounding present/attached
- Covers, plates, plugs
- Practical considerations (i.e., location of equipment/proximity to heat sources

Other nonconforming features:
- Fire barrier penetration issues
- Insulation integrity issues or problems
- Equipment accessibility issues (for inspection/maintenance)
- Housekeeping
- Combustible loading violations

Management will be notified in writing of system deficiencies discovered during walkdowns

END OF DOCUMENT